

CNST-2422: FUNDAMENTALS OF ENGINEERING ECONOMICS

Cuyahoga Community College

Viewing: CNST-2422 : Fundamentals of Engineering Economics

Board of Trustees:

JUNE 2026

Academic Term:

Fall 2026

Subject Code

CNST - Construction Engineering Tech

Course Number:

2422

Title:

Fundamentals of Engineering Economics

Catalog Description:

Analysis of cost elements in engineering projects and operations. Topics include: comparison of project alternatives; selecting an alternative by applying Benefit/Cost Analysis, Present Worth Method, Annual Worth Method, and Internal Rate of Return; introduction to risk analysis, accounting fundamentals, financial statements, and capital financing and allocation. Ethical and social responsibilities as applied to engineering project decisions. Practical applications of cost concepts and the application towards the different phases of manufacturing or project implementation. Use of Microsoft Excel in performing analysis.

Credit Hour(s):

3

Lecture Hour(s):

3

Requisites

Prerequisite and Corequisite

MATH-1530 College Algebra or higher.

Outcomes

Course Outcome(s):

Apply the principles of Engineering Economics in planning and acquisition of engineering resources

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Explain Benefit/cost Ratio Evaluation Methods
2. Plan and conduct cost analysis of given project options
3. Perform time value of money and cash flow analysis
4. Determine the depreciation values of capital resources and taxes
5. Conduct Benefit/cost Ratio evaluations
6. Analyze project uncertainty using sensitivity analysis and Monte Carlo simulations
7. Perform Engineering Economics Analysis Using Microsoft Excel
8. Explain ethical and social responsibilities as applied to project decisions.

Methods of Evaluation:

1. Exams and quizzes
2. Reports and Projects

Course Content Outline:

1. Understanding Money and its Management
 - a. Engineering Economic Decisions
 - b. Financial Mathematics
 - c. Understanding Money Management
 - d. Managing Money under Inflation
2. Evaluating Business and Engineering Assets
 - a. Present Worth Analysis
 - b. Annual Equivalence Analysis
 - c. Rate of Return Analysis
3. Development of project cash flows
 - a. Accounting for Depreciation and Income Taxes
 - b. Project Cash Flow Analysis
 - c. Handling Project Uncertainty
4. Handling Project Uncertainty
 - a. Sensitivity Analysis
 - b. Adjusting for Risk
 - c. Introduction to Monte Carlo Simulations
5. Special Topics in Engineering Economics
 - a. Replacement Decisions
 - b. Benefit-Cost Analysis
 - c. Accounting Fundamentals
 - d. Understanding Financial Statements
 - e. Using Microsoft Excel in Solving Engineering Economics Problems
 - f. Introduction to Capital Financing and Allocation
6. Ethical and Social Responsibilities as apply to project decisions

Religious Accommodation

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

Religious Accommodation:

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen (14) days after the first day of instruction. Please submit requests for accommodations at this link: <https://portal2.tri-c.edu/ReligiousAccommodation/ReligiousAccommodationForm>. Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at legal@tri-c.edu.

Other Required Instructional Policies:

<https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf>

Weekly Schedule

	Topics
Week 1	Syllabus and Comments Introduction Discussion Board Introduction to Engineering Economics
Week 2	Cost Concepts and Design Economics
Week 3	Cost Estimating Techniques
Week 4	The Time Value of Money
Week 5	Evaluating single projects Test #1 Review/Test Prep

Week 6	Evaluating a Single Project "Persuaders" Video and Quiz
Week 7	Comparison and Selections among Alternatives Game Theory Videos Quiz on Game Theory Videos
Week 8	Comparison and Selection among Alternatives
Week 9	Depreciation and Income Taxes Watch Divided Highways Video Quiz on Divided Highways Video
Week 10	Depreciation and Income Taxes Complete Practice Test
Week 11	Depreciation and Income Taxes Pre/Post Tax Deductions/Credits Material Introduction to Probability Marginal Tax Rate Videos
Week 12	Complete Activity on Depreciation Dealing with Uncertainty
Week 13	Expected Value & Probability Analysis Expected Present Worth
Week 14	Capital Budgeting Finding Cost of Equity Exam
Week 15	Final Exam Review Practice Final Exam
Week 16	Final Exam Week

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

Required/Recommended Readings

Sullivan, W.G., Wicks, E.M., Wilck, J.H. *Engineering Economy*.

Resources for the Instructor

Sullivan WG, Wicks EM, Wilck JH. *Engineering Economy*. 18th. Hoboken: Pearson Education, Inc., 2024.

Park, Chan. *Contemporary Engineering Economics*. 7th Ed. Hoboken, NJ.: Pearson Education, Inc., 2022.

Park, Chan S. . *Fundamentals of Engineering Economics*. 4th. Pearson, 2022.

Instructional Services

OAN Number:

Transfer Assurance Guide OES005

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Key: 5481